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The Mineral Industry of Pennsylvania in 1952

By

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COMMONWEALTH OF PENNSYLVANIA

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The Mineral Industry of Pennsylvania

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By Richard H. Mote [1] and Alvin Kaufman [2]

THE COMMONWEALTH of Pennsylvania continued in 1952 to be one of the foremost sources of mineral commodities in the United States. It maintained its position as one of the largest producers of bituminous coal, clay, cobalt, lime, slate, stone, tripoli, and sand and gravel and continued to be the sole domestic producer of anthracite.

Pennsylvania produced a wide variety of mineral commodities, ranging from fuels to nonmetals. Of these, the most important economically were coal, cement, petroleum, stone, and natural gas.

The bituminous-coal production is centered in the southwestern and central counties, with anthracite concentrated in the northeast. Liquid fuel and natural gas come mainly from the western and north central areas. The cement and stone industries have their largest production in the northeast and southwest, respectively.

The importance of fuels to the State's mineral economy is illustrated most sharply by consideration of the 8 counties whose individual mineral production exceeded $50 million in 1952. These were, in order of size: Luzerne, Schuylkill, Washington, Cambria, Northampton, Allegheny, Lackawanna, and Greene. All except Northampton owe their predominant position to the production of coal.

In 1952 nearly 81 percent of the value of the State's mineral output was attributable to fuels, 18 percent to nonmetals, and 1 percent to metals, virtually all of which was iron ore or byproducts of that commodity. Metals declined 18 percent in value as compared with 1951, largely as a result of a prolonged strike in the iron and steel industry.

The impact of the labor strike was felt not only in the metals industry but in virtually every segment of the mineral economy. Fuel production declined 12 percent in value, partly a result of the strike as well as of the competitive forces of other fuels on the coal industry. Although fire clay for refractories and limestone for flux were particularly affected by the decreased activity in the steel industry, the nonmetals as a group declined least. The value of output dropped 5 percent.

In general, the effect of the steel strike was such that the value of Pennsylvania mineral production declined 11 percent as compared with the record high established in 1951.

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It was in a segment of the nonmetals industry that producers made an enviable safety record. Of the 10 crushed-stone plants in the United States that operated without a single lost-time injury in 1952, 3 were in Pennsylvania; 1 was operated by the Warner Co. and 2 by the General Crushed Stone Co.

TABLE 1.—Mineral production in Pennsylvania, 1951–52 [1]

Mineral	1951		1952	
	Short tons (unless otherwise stated)	Value	Short tons (unless otherwise stated)	Value
Cement---376-pound barrels	41,560,431	$107,035,506	40,037,761	$103,388,586
Clays (except for cement)	3,992,403	13,663,764	3,528,161	12,308,828
Coal:				
Anthracite	42,669,997	405,817,963	40,582,558	379,714,076
Bituminous	108,163,843	572,194,085	89,181,232	473,475,646
Cobalt (content of ore)---pounds	755,631	[2]	639,856	[2]
Gold (recoverable content of ores, etc.) troy ounces	2,179	76,265	1,500	52,500
Iron ore (usable)---long tons, gross weight	1,215,033	[2]	992,110	[2]
Lime (open-market)	1,181,100	14,260,054	1,202,981	13,842,213
Natural gas---thousand cubic feet	128,715,000	35,654,000	108,684,000	30,758,000
Natural-gas liquids:				
Natural gasoline---42-gallon barrels	192,000	656,000	171,000	548,000
LP-gases---do	18,000	71,000	19,000	75,000
Peat	8,591	46,568	7,898	43,874
Petroleum (crude)---42-gallon barrels	11,345,000	48,220,000	[3] 11,233,000	[3] 47,740,000
Sand and gravel	15,737,464	21,488,540	14,696,106	19,920,003
Silver (recoverable content of ores, etc.) troy ounces	13,575	12,286	9,247	8,369
Slate	268,830	5,688,870	214,860	4,487,648
Stone (except limestone for cement and lime)	[4] 27,399,564	[4] 46,668,590	[4] 25,609,812	[4] 44,676,456
Undistributed: Copper, mica, pyrites, ground sand and sandstone, stone (dimension unclassified, 1951 and dimension basalt, 1952), tripoli, and minerals whose value must be concealed for particular years (indicated in appropriate column by footnote reference 2)	----	[5] 17,672,755	----	14,558,890
Total Pennsylvania	----	1,289,226,000	----	1,145,598,000

[1] Production as measured by mine shipments or mine sales (including consumption by producers), except that fuels and pyrites are strictly production.
[2] Value included with "Undistributed."
[3] Final figure. Supersedes preliminary figure given in commodity chapter.
[4] Excludes certain stone, value for which is included with "Undistributed."
[5] Revised figure.

REVIEW BY MINERAL COMMODITIES

METALS

The Bethlehem Steel Co. Cornwall mine in Lebanon County was Pennsylvania's only metallic ore producer in 1952. This property yields a magnetic iron ore containing pyrite in association with minerals containing copper, gold, silver, and cobalt, all of which are recovered as byproducts of iron-ore beneficiation. This company also continued development work on the Grace iron mine, Morgantown, Berks County.

During the year Bethlehem Steel Co. dropped to second place as a domestic producer of commercial cobalt ore. This material was shipped as a concentrate to Wilmington, Del., for reduction.

Although no mine production of zinc was recorded in the State in 1952, activity of the New Jersey Zinc Co. at Friedensville, Lehigh County, promises to make Pennsylvania again a producer of zinc ore. The company reported that the principal service buildings and

facilities, except the concentrating mill, were completed by the end of 1952. Although the mine shaft was excavated to a depth of 1,260 feet, considerable underground development remained to be completed before the mine could begin production.

NONMETALS

Cement.—The production of cement from Pennsylvania plants decreased 6 percent in 1952 as compared with 1951, owing largely to a 33-percent drop in Pennsylvania construction activity during the year.[3]

Shipments from Pennsylvania cement plants in 1952 were 599,800 barrels over production; withdrawals from stocks were, of course, necessary, resulting in a 21-percent decline in these reserves from the level at the beginning of the year.

Pennsylvania cement production is concentrated in two major areas. The larger of these consists of Lehigh and Northampton Counties in the northeast part of the State. These 2 counties, with 16 mills, supplied 72 percent of the cement shipped in 1952. This region's leadership in cement production results from the occurrence of the Jacksonburg limestone in the area. The presence of large tonnages of this rock near the surface, with its almost ideal lime, alumina, and silica content, gives the Lehigh-Northampton area a natural advantage over most other sections of the State.

The second center of production is in the densely populated region of western Pennsylvania, comprising Allegheny, Butler, and Lawrence Counties. Five producing plants in this area utilize the Vanport limestone.

Major cement producers in 1952, in order of decreasing output, were: Universal Atlas Cement Co., Lehigh Portland Cement Co., Penn Dixie Cement Co., Keystone Portland Cement Co., Alpha Portland Cement Co., Lone Star Cement Co., Hercules Cement Corp., Whitehall Cement Mfg. Co., Dragon Cement Co., Inc., and Medusa Portland Cement Co.

TABLE 2.—Finished portland cement produced, shipped, and in stock, 1943–47 (average) and 1948–52

Year	Active plants	Production (barrels)	Shipped from mills			Stocks at mills on Dec. 31 (barrels)
			Barrels	Value		
				Total	Average per barrel	
1943–47 (average)	24	22, 049, 669	22, 608, 976	$36, 626, 541	$1. 62	3, 128, 288
1948	24	38, 310, 627	38, 255, 543	81, 638, 484	2. 13	2, 056, 756
1949	24	38, 122, 065	36, 905, 254	84, 839, 175	2. 30	3, 275, 594
1950	24	38, 646, 260	39, 450, 611	94, 604, 230	2. 40	2, 471, 243
1951	24	41, 981, 431	41, 560, 431	107, 035, 506	2. 58	2, 892, 243
1952	24	39, 437, 971	40, 037, 761	103, 388, 586	2. 58	2, 292, 453

[3] Engineering News Record, vol. 150, Feb. 19, 1953, p. 58.

TABLE 3.—Shipments of portland cement, 1951–52, in 376-pound barrels

County	1951		1952	
	Barrels	Value	Barrels	Value
Northampton	22, 200, 885	$57, 121, 368	21, 320, 251	$55, 077, 602
Lehigh	7, 493, 731	18, 998, 813	7, 452, 361	18, 897, 949
Allegheny, Lawrence, Butler	8, 376, 451	20, 906, 158	7, 760, 593	19, 467, 522
Berks, Montgomery, York	3, 489, 364	10, 009, 167	3, 504, 556	9, 945, 513
Total	41, 560, 431	107, 035, 506	40, 037, 761	103, 388, 586

Clays.—Although over half of Pennsylvania's 67 counties produced clays in 1952, the State's production dropped 12 percent below that in 1951. This decline was due in large part to the steel strike of mid-1952, which curtailed consumption of fire-clay refractories.

The 107 clay pits active in the Commonwealth in 1952 produced kaolin, fire clay, and various miscellaneous clays and shale. Of these, fire clay and kaolin were the most important, and represented 85 percent of the value of clay products produced in 1952. Fire clay was used for refractory and heavy clay products. This material was produced predominantly in Clearfield, Beaver, Jefferson, Somerset, and Armstrong Counties. Major producing companies continued to be Harbison-Walker Refractories Co., General Refractories Co., and North American Refractories Co.

Miscellaneous clays and shale are used in producing face brick, common brick, and other structural clay products. Production was concentrated in Allegheny, Berks, Lawrence, Northumberland, and Dauphin Counties. The largest producers of this material were Glen Gery Shale Brick Co. and Freeport Brick Co.

It should be noted that the low value attributed to miscellaneous clays has little bearing on the price of the final product, because labor and fuels involved in shaping, drying, and firing constitute such a large percentage of the manufacturing cost.

Pennsylvania kaolin was produced almost entirely in Cumberland County, with some small output in Blair County. The only producers of this white clay in 1952 were Philadelphia Clay Co. and United Clay Mines Corp. Kaolin was used almost entirely as a cement whitener.

TABLE 4.—Clays sold or used by producers, 1943–47 (average) and 1948–52

Year	Kaolin		Fire clay		Miscellaneous clays		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1943–47 (average)	25, 123	$96, 280	1, 434, 895	$4, 604, 254	954, 901	$800, 541	799, 941	$5, 500, 475
1948	50, 021	190, 998	1, 871, 687	7, 303, 153	1, 687, 319	1, 360, 997	3, 609, 027	8, 855, 148
1949	52, 478	201, 576	1, 663, 564	6, 316, 196	1, 594, 729	1, 308, 907	3, 310, 771	7, 826, 679
1950	62, 626	250, 383	1, 731, 855	7, 149, 589	1, 687, 712	1, 415, 346	3, 482, 194	8, 815, 318
1951	75, 415	306, 045	[1] 2, 205, 794	[1] 11, 653, 734	1, 949, 358	2, 127, 771	4, 230, 567	14, 087, 550
1952	(1)	(1)	[1] 1, 992, 099	[1] 10, 726, 085	1, 739, 031	1, 913, 779	3, 731, 130	12, 639, 864

[1] To avoid disclosure of individual company figures, kaolin has been combined with fire clay.

TABLE 5.—Clays sold or used by producers in 1952, by kinds and uses

	Fire clay [1]		Miscellaneous clays		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
Refractories:						
Firebrick and block [2]	1,124,796	$7,741,760			1,124,796	$7,741,760
Fire-clay mortar	38,361	319,372	194	$1,761	38,555	321,133
Foundries and steelwork	99,346	294,791	17,620	25,120	116,966	319,911
Heavy clay products	691,673	2,166,866	1,537,249	1,673,217	2,228,922	3,840,083
Pottery and stoneware	9,059	44,905			9,059	44,905
Tile, high-grade			1,905	2,280	1,905	2,280
Paint fillers or extenders			898	12,925	898	12,925
Miscellaneous fillers			4,946	22,257	4,946	22,257
Cement	28,864	158,391	174,510	174,510	203,374	332,901
Other uses			1,709	1,709	1,709	1,709
Total	1,992,099	10,726,085	1,739,031	1,913,779	3,731,130	12,639,864

[1] Includes kaolin. [2] Includes high-alumina brick.

TABLE 6.—Clays sold or used by producers in 1952, by counties

County	Short tons	Value	County	Short tons	Value
Adams	56,500	$56,500	Huntingdon	10,540	$90,879
Allegheny	239,834	239,834	Indiana	17,610	70,440
Armstrong	240,852	852,036	Jefferson	252,961	1,151,212
Beaver	313,167	1,067,659	Lancaster	63,716	63,716
Blair	51,106	124,647	Lawrence	161,771	189,271
Butler	19,535	20,582	McKean	128,687	245,548
Centre	38,584	220,554	Montgomery	59,311	161,481
Chester	65,250	82,800	Northumberland	128,695	175,506
Clarion	82,941	353,697	Snyder	53,275	53,275
Clearfield	566,000	4,544,421	Somerset	223,378	1,046,462
Clinton	38,943	239,515	Washington	51,651	51,651
Columbia	12,599	12,599	Westmoreland	58,652	541,475
Dauphin	103,344	103,344	York	68,885	68,885
Delaware	27,350	27,350	Undistributed	554,780	714,788
Fayette	37,213	65,737			
Greene	4,000	4,000	Total	3,731,130	12,639,864

Iron Oxide Pigments.—Despite a 12-percent drop in production in 1952, Pennsylvania continued to be a major source of iron oxide pigments; the most important was the red oxide of Northampton County. Producers active in 1952 were Reichard-Coulsten, Inc.; C. K. Williams & Co., Easton; Keystone Filler & Mfg. Co., Muncy; Pen Paint & Filler Co., Antes Fort; Vitre Pigments, Inc., and Prince Mfg. Co., Bowmanstown.

TABLE 7.—Iron oxide pigments sold in 1951–52

County	1951		1952	
	Short tons	Value	Short tons	Value
Carbon and Northampton	37,541	$5,405,857	30,347	$4,436,003
Jefferson	238	11,424	392	18,322
Lycoming	15,551	239,729	16,253	264,453
Total	53,330	5,657,010	46,992	4,718,778

Lime.—Pennsylvania lime production continued to increase for the third consecutive year. Although the gain in output over 1951 was

less than 2 percent, it was notable because it indicates a growing trend toward the use of lime for chemical, industrial, and refractory purposes. The value of all types of Pennsylvania lime except refractory material declined in 1952. Industrial and chemical lime showed the greatest total dollar decrease.

There were 29 plants in operation during the year; of these, 8 plants produced 83 percent of the State output. Major producing units are owned by the Warner Co., National Gypsum Co., H. E. Millard Lime & Stone Co., and the J. E. Baker Co.

TABLE 8.—Lime sold or used by producers in 1952, by counties

County	Short tons	Value
Armstrong	608	$7,406
Centre	481,572	4,816,476
York	332,114	3,773,698
Undistributed	388,687	5,244,633
Total	1,202,981	13,842,213

Perlite.—Although crude perlite is not produced in Pennsylvania, quantities are imported from southwestern United States for heat treatment and expansion.

Expanded perlite was produced in 1952 by Panacalite Perlite Co., Pittsburgh; Pennsylvania Perlite Corp., Allentown; Perlite Mfg. Co., Carnegie; and Perlite Products, Inc. Primos, for use as a lightweight aggregate in plaster and concrete, and as a loose-fill insulation material.

Expanded perlite was first produced in Pennsylvania in 1949. Since then output has increased sharply each succeeding year. Sales in 1952 totaled a record 15,400 short tons valued at $938,700, which represented a 25-percent gain over the 1951 figure of 12,400 tons, valued at $757,100.

Sand and Gravel.—Sand and gravel output in Pennsylvania declined 7 percent in 1952 compared with the previous year. The major use of these commodities was as a building and paving aggregate. They were also utilized for glass, polishing and grinding, filtering, railroad ballast, fill, molding and refractory purposes, and traction.

Gravel output dropped 3 percent and sand 9 percent in 1952. The latter yielded the greatest revenue, exceeding the value of gravel produced by more than $3½ million.

The production of sand and gravel in Pennsylvania, as in other States, is essentially a local industry depending upon regional rather than national markets. The low unit value of the product and its great bulk limit shipping distances; as a result virtually every county in the State includes one or more sand and gravel operations.

Major producers in 1952 were Dravo Corp., Pittsburgh; Iron City Sand & Gravel Co., Pittsburgh; Pennsylvania Glass Sand Co., Lewistown; and Warner Corp. Approximately 102 sand and gravel pits were operating in Pennsylvania in 1952.

TABLE 9.—Lime sold by producers, 1943–47 (average) and 1948–52, by uses

Year	Agricultural		Building		Chemical and industrial		Refractory		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1943–47 (average)	165, 581	$1, 397, 505	48, 733	$522, 964	[1] 779, 545	[1] $6, 310, 232	(1)	(1)	993, 859	$8, 230, 701
1948	133, 931	1, 448, 207	112, 217	1, 479, 089	[1] 839, 659	[1] 8, 392, 389	(1)	(1)	1, 085, 807	11, 319, 685
1949	136, 199	1, 512, 069	111, 278	1, 566, 371	[1] 663, 588	[1] 7, 112, 239	(1)	(1)	911, 065	10, 190, 679
1950	135, 182	1, 530, 991	134, 052	1, 944, 178	650, 756	7, 110, 931	166, 461	$2, 076, 974	1, 086, 451	12, 663, 074
1951	134, 559	1, 532, 813	126, 048	1, 740, 850	741, 673	8, 551, 011	178, 820	2, 435, 380	1, 181, 100	14, 260, 054
1952	131, 007	1, 463, 596	123, 049	1, 675, 987	768, 319	8, 228, 875	180, 606	2, 473, 755	1, 202, 981	13, 842, 213

[1] To avoid disclosure of individual company operations, refractory tonnage is included with chemical and industrial.

TABLE 10.—Sand and gravel sold or used by producers in 1952, by counties

County	Short tons	Value	County	Short tons	Value
Allegheny	1,232,355	$2,184,932	Erie	420,321	$448,252
Beaver	1,060,869	1,395,564	Lancaster	263,333	543,273
Berks	23,666	38,270	Luzerne	268,257	335,994
Bucks	4,935,959	5,787,287	Mifflin	400,862	817,872
Carbon	351,697	440,256	Somerset	2,269	6,587
Crawford	86,317	90,117	Undistributed	5,131,045	7,693,772
Dauphin	519,156	137,827	Total	14,696,106	19,920,003

TABLE 11.—Sand and gravel sold or used by producers, 1951–52

	1951		1952	
	Short tons	Value	Short tons	Value
Sand:				
Molding and fire or furnace	456,912	$1,072,838	445,270	$1,103,911
Building	4,332,703	5,316,718	4,270,064	5,021,197
Paving	2,454,991	3,059,517	2,038,867	2,741,982
Grinding, polishing, and blast	334,915	675,615	204,064	414,210
Engine	297,061	647,302	226,500	450,112
Glass and filter	691,299	1,951,708	547,969	1,592,924
Other	177,425	405,837	214,488	435,330
Total sand	8,745,306	13,129,535	7,947,222	11,759,666
Gravel:				
Building	3,803,824	4,873,097	3,907,124	4,862,059
Paving	3,050,286	3,336,914	2,709,622	3,145,421
Railroad ballast	84,193	53,341	67,627	45,245
Other	53,855	95,653	64,511	107,612
Total gravel	6,992,158	8,359,005	6,748,884	8,160,337
Grand total	15,737,464	21,488,540	14,696,106	19,920,003

Slate.—Pennsylvania continued in 1952 as the Nation's foremost producer of slate despite a 21-percent drop in sales from the 1951 level. Decline in activity within the industry resulted from increased competition of other construction materials and consumer preference for New England colored slate. The effect of New England competition is best illustrated by the decrease in Pennsylvania's lead over Vermont and Maine, the second largest producing area. In 1951 Pennsylvania produced 27 percent more slate than these two States, but in 1952 this figure dropped to 6 percent.

The number of Pennsylvania slate-pit operators fell 24 percent in 1952 as a result of the smaller market. During the year production was localized in York, Northampton, and Lehigh Counties. York remained the largest tonnage producer; most of this output was crushed and ground for use in composition roofing and paints. Northampton County, however, led in dollar value because this slate was sold as dimension slate roofing and mill stock.

Major producers in 1952 were Funkhouser Co., Albion Vien Slate Co., North Bangor Slate Co., Capital Slate Co., and Stephens-Jackson Co.

TABLE 12.—Slate sold by producers, 1943–47 (average) and 1948–52 by uses

Year	Number of operators	Roofing		Mill stock		Other uses	Total value
		Squares (100 square feet)	Value	Square	Value	Value	
1943–47 (average)	19	91,686	$1,071,211	1,957,812	$617,855	$933,034	$2,622,100
1948	26	146,860	2,846,371	2,103,720	1,084,613	1,420,169	5,351,153
1949	26	112,870	2,124,573	2,339,830	1,243,798	1,210,273	4,578,644
1950	28	124,280	2,341,127	2,724,450	1,559,587	1,645,300	5,546,014
1951	25	134,180	2,681,072	2,589,090	1,416,657	1,591,141	5,688,870
1952	18	93,200	1,866,479	2,078,020	1,227,471	1,393,698	4,487,648

TABLE 13.—Slate sold by producers, 1951–52, by counties

County	1951		1952	
	Short tons	Value	Short tons	Value
Lehigh	3,740	$309,282	1,930	$188,683
Northampton and York	265,090	5,379,588	212,930	4,298,965
Total	268,830	5,688,870	214,860	4,487,648

Stone.—Stone production in Pennsylvania in 1952 declined slightly compared with the record year 1951 but was 1 percent above 1950 and 21 percent greater than 1949. The drop in 1952 was entirely in the market for crushed and broken stone.

Although virtually all the State stone output was sold as crushed or broken material, Pennsylvania continued to be one of the largest domestic producers of dimension stone for rough construction use.

Of the more than 25 million tons of rock mined or quarried in the State in 1952, 82 percent was limestone. This material was used as a fluxing agent, in concrete production, as road metal, as railroad ballast, and for agricultural purposes. A total of 10 quarries, all in the southeastern section of the State, yielded basalt and diabase. The dark color of this traprock limits its use as a building material. However, its crystalline nature imparts superior tensile strength, making it an excellent aggregate for concrete. Some of this rock is sold for monumental purposes.

Sandstone for use as dimension stone, road metal, and, when crushed, for ganister, was produced at 44 quarries in 1952. Ganister was used by several refractory plants in preparing silica brick.

Small quantities of various miscellaneous rocks, such as serpentine, soapstone, gneiss, and mica schist, were quarried for local use during the year. An estimated 14 miscellaneous stone quarries operated in the State in 1952.

TABLE 14.—Stone sold or used in 1952, by counties

County	Short tons	Value	County	Short tons	Value
Adams	1,537,067	$2,533,069	Lancaster	1,325,416	$1,944,724
Berks	1,504,618	2,215,276	Lawrence	2,632,610	4,377,355
Blair	712,010	1,536,159	Lebanon	1,280,841	1,893,807
Bucks	443,773	929,456	Lehigh	302,385	388,014
Butler	1,424,865	2,446,268	Lycoming	325,651	528,032
Carbon	23,687	53,545	Mifflin	841,479	1,337,489
Centre	987,860	1,879,197	Monroe	39,085	53,546
Chester	864,888	1,492,974	Montgomery	2,520,564	4,242,792
Clinton	106,769	164,070	Perry	77,225	140,000
Cumberland	351,743	539,957	Schuylkill	14,281	20,976
Dauphin	762,144	1,185,904	Susquehanna	4,129	56,480
Delaware	763,072	1,363,716	Westmoreland	417,805	851,991
Fayette	59,628	179,225	York	1,288,589	2,747,548
Franklin	402,151	638,369	Undistrihuted	[1] 3,872,387	[1] 6,379,743
Greene	25,000	50,000			
Huntingdon	600,155	2,325,919	Total	[1] 25,609,812	[1] 44,676,456
Juniata	97,935	180,855			

[1] To avoid disclosing confidential information, total is incomplete.

TABLE 15.—Stone sold or used by producers, 1951–52, by uses

Use	1951		1952	
	Quantity	Value	Quantity	Value
Dimension stone:				
Building stone—short tons	[1] 137,273	[1] $521,960	[1] 156,413	[1] $769,658
Monumental stone—cubic feet	15,529	159,291	19,449	243,148
Approximate equivalent in short tons	1,304		1,634	
Curbing and flagging—cubic feet	96,022	153,770	135,218	186,955
Approximate equivalent in short tons	7,490		11,277	
Total dimension stone—short tons	[1] 146,067	[1] 835,021	[1] 169,324	[1] 1,199,761
Crushed and broken stone:				
Riprap—short tons	150,652	260,887	[2] 188,549	[2] 322,346
Crushed stone—do	[2] 12,814,002	[2] 18,590,946	13,254,633	19,160,967
Furnace flux (limestone)—do	10,175,056	15,407,829	8,703,922	14,186,713
Refractory—do	723,102	3,457,481	676,885	3,195,579
Agricultural (limestone)—do	1,030,212	2,828,090	1,065,358	2,733,395
Other uses—do	[2] 1,572,390	[2] 3,327,127	[2] 1,485,220	[2] 3,327,413
Undistrihuted—do	788,083	1,961,209	65,921	550,282
Total crushed and broken stone—do	27,253,497	45,833,569	25,440,488	43,476,695
Grand total—do	[1] 27,399,564	[1] 46,668,590	[1] 25,609,812	[1] 44,676,456

[1] To avoid disclosing confidential information, certain totals are incomplete.
[2] Incomplete, the portion not included being combined as "Undistrihuted."

Miscellaneous Minerals.—In addition to its other mineral products, the Commonwealth's mines yielded $149,105 worth of such commodities as scrap mica, peat, tripoli, and pyrite in 1952. The latter was a byproduct of the Bethlehem Steel Co. iron-mining operation at Cornwall, Lebanon County. Scrap mica was produced in York County by General Mining Associates.

The tripoli produced in Pennsylvania is actually a rottenstone mined from open pits at Antes Fort and Muncy, Lycoming County. It is used predominantly as a filler in the manufacture of phonograph records.

The processing of iron blast-furnace slag for use as a construction material is an important adjunct of the Commonwealth's mineral

industry. In 1952 Pennsylvania supplied 20 percent of the United States total and ranked second in the country in the production of processed slag. The output increased from 5,071,800 tons valued at $7,332,500 in 1951, to 5,510,600 tons worth $7,002,700 in 1952.

Magnesium compounds were produced at plants of Keasby & Mattison and Phillip Carey Manufacturing Co., both in Montgomery County.

MINERAL FUELS

Coal.—Both anthracite and bituminous coal are mined in Pennsylvania. Bituminous or soft-coal beds underlie the western and central sections of the State and occur in detached hilltop basins, as these beds trend north and east. The trend is accompanied by decreased volatility of the coal, the high-volatile seams occurring in the area near Pittsburgh, the low-volatile toward the east.

The anthracite or hard-coal deposits in the northeastern part of the State constitute an extension of this trend. Beds of this material, the lowest volatile coal, are situated in four canoe-shaped basins of strongly folded sedimentary rocks. As anthracite is used primarily for commercial and residential heating, the advent of competitive fuels in its sales area has caused a serious marketing problem. Production in 1952 dropped 5 percent from the 1951 level and was the smallest annual output since 1886.

Bituminous-coal production in 1952 was 18 percent below that of the previous year, owing primarily to the steel strike in mid-1952 as well as to competitive factors.

To combat competition from petroleum products and natural gas, the coal industry, largely collectively but in some instances individually, continued various research programs. An important individual effort was the research laboratory of Pittsburgh Consolidation Coal Co. at Library, which investigated coal hydrogenation and gasification and pipeline distribution of pulverized coal. Bituminous Coal Research, Inc., with headquarters at Pittsburgh, is supported by a group of over 300 coal companies, railroads, and equipment manufacturers; it studied the development of mechanized mining equipment, coal-fired gas turbines, residential space heaters and automatic boilers, and expansion in the range of coals used for coking. The work of the Bureau of Mines on synthetic fuels technology at Bruceton supplemented industrial coal research and development during the year.

The major soft-coal-producing counties, in order of decreasing tonnage, were: Washington, Cambria, Allegheny, Greene, Fayette, Indiana, and Clearfield Counties.

Reserves in these counties, as well as in other coal-producing areas, are more than adequate to meet anticipated future demands. As of 1950, total reserves were estimated at 73,232,535,000 short tons. Approximately 36,616,268,000 tons was considered recoverable.[4]

[4] Bureau of Mines, Bituminous Coal and Lignite in 1952: Mineral Market Summary 2222, 1953, 96 pp.

TABLE 16.—Production of Pennsylvania anthracite, 1951–52, by counties, in short tons

County	1951	1952	County	1951	1952
Carbon	1,670,767	1,844,775	Northumberland	5,742,283	5,550,898
Columbia	803,595	647,514	Schuylkill	13,659,220	13,287,747
Dauphin, Susquehanna, and Wayne	304,714	102,895	Sullivan	28,762	24,055
Lackawanna	5,733,782	5,323,145	Total	[1] 42,403,651	[1] 40,315,871
Luzerne	14,460,528	13,534,842			

[1] Excludes counties producing dredge coal only.

TABLE 17.—Production of bituminous coal, by counties, 1952

[Exclusive of mines producing less than 1,000 tons]

County	1952		County	1952	
	Short tons	Average value per ton		Short tons	Average value per ton
Allegheny	9,614,860	$5.30	Indiana	6,288,635	$5.24
Armstrong	3,361,174	4.35	Jefferson	1,726,513	4.20
Beaver	455,384	4.29	Lawrence	287,702	3.61
Bedford	247,658	5.99	Lycoming	31,961	4.47
Blair	209,400	4.32	McKean	43,847	3.39
Bradford	9,739	5.12	Mercer	529,542	4.14
Butler	1,897,263	4.02	Somerset	5,301,972	5.22
Cambria	12,339,260	6.09	Tioga	71,935	5.37
Cameron	66,206	3.87	Venango	511,039	3.50
Centre	1,096,230	3.95	Washington	13,369,226	5.76
Clarion	2,258,494	3.66	Westmoreland	4,588,705	5.33
Clearfield	6,025,719	4.53	Other counties: Fulton and Huntingdon	421,402	6.21
Clinton	630,972	3.26			
Elk	617,535	4.26			
Fayette	7,581,264	5.77	Total	89,181,232	5.31
Greene	9,598,195	5.69			

Natural Gas.—Production of natural gas in Pennsylvania in 1952 dropped 16 percent from the record high output of 1951. The Pennsylvania Topographic and Geologic Survey reported that the Driftwood gas field in Cameron County and the Leidy gas field in Clinton County underwent intensive development in 1952.[5] The productive area of the Driftwood field included 1,400 acres, and the Leidy pool had been expanded to 11,000 acres by the end of 1952.

Exploratory drilling in shallow sand territory (Upper Devonian or higher) led to discovery of a small gas field in southwestern Pennsylvania and two other small pools in northwestern Pennsylvania. These were in Wharton Township, Fayette County; Jenks Township, Forest County; and Liberty Township, McKean County. A total of 313 gas wells was completed during the year. In addition to the production of natural gas, 11 plants produced natural-gas liquids as a byproduct. Five of these plants produced 11,000 barrels by compression, and 6 produced 179,000 barrels by absorption.

Data on the output of natural gas and natural-gas liquids by counties in Pennsylvania in 1952 are not available.

[5] Fettke, C. R., Oil and Gas Developments in Pennsylvania in 1952: Pennsylvania Topographic and Geologic Survey, Progress Rept., 143, 1953, 30 pp.

Petroleum.—Pennsylvania is the oldest commercial oil-producing area in the United States. The first well was drilled in 1859 by Francis Drake near Titusville, Crawford County. From this foremost position, the State has declined until today it ranks 15th in the Nation in crude-oil output; however, the crude being produced is of exceptionally high quality and commands a premium price. In 1952 Pennsylvania crude was valued at $4.25 per barrel at the well. The average for the United States was $2.53.

Production in 1952 declined slightly from the previous year, despite an increase in the number of producing wells to 80,600 from 78,800 in 1951. The State produced less than 1 percent of the national petroleum output but had 16 percent of the producing wells. Pennsylvania wells in 1952 yielded the lowest average production per well per day (0.4 barrel) in the United States.

In all, 1,390 oil wells, including 1,366 in connection with secondary recovery operations, were drilled.[6] Virtually all the new wells were put on the pump or lift.

TABLE 18.—Crude-oil production, 1952, by counties [1]

County	Production (thousand barrels)	Wells connected as of Dec. 31, 1951	Wells connected during 1952	Wells disconnected during 1952	Wells connected as of Dec. 31, 1952
Allegheny	148	1,264	5	60	1,209
Armstrong	16	374			374
Beaver	15	432		15	417
Butler	217	3,539	34	128	3,445
Clarion	64	1,703	5	39	1,669
Crawford	35	910	88	82	916
Elk	32	668	5		673
Fayette	1	12			12
Forest	49	1,161	21	22	1,160
Greene	66	893	4	46	851
Jefferson	6	106			106
McKean	9,057	36,064	843	876	36,031
Mercer	7	248		2	246
Potter	223	371	42	10	403
Tioga	3	18			18
Venango	607	19,634	3,298	1,647	21,285
Warren	476	9,890	627	790	9,727
Washington	213	2,125	4	50	2,079
Total	11,235	79,412	4,976	3,767	80,621

[1] Department of Internal Affairs, Pennsylvania Topographic and Geologic Survey.

REVIEW BY COUNTIES

ADAMS

Mineral production in Adams County in 1952 was limited to clay and stone. The county ranked fifth in the State in the value of stone output, 95 percent of which was crushed and broken limestone, sold primarily for flux, road material, and agricultural purposes. The remaining stone output was basalt, crushed for use as concrete aggregate. Major stone producers during the year included Bethlehem Quarry Co, Bittinger, and the Gingell Quarries Co., Fairfield. Miscellaneous clays were produced by Alwine Brick Co., New Oxford, and Gettysburg Drain Tile Works, Gettysburg, for use in manufacturing brick and tile.

[6] Work cited in footnote 5.

ALLEGHENY

Major mineral products of Allegheny County in 1952 were bituminous coal, cement, sand and gravel, stone, and clay. The county ranked second in the State during the year in sand and gravel output, third in the production of bituminous coal and cement, and fourth in value of output of dimension stone.

Mines in the county yielded 9,614,860 short tons of bituminous coal in 1952. A large percentage of this coal, which had an average value at the mine of $5.30 per ton, was mined from the Pittsburgh and upper Freeport seams. Only 10 percent of the county production resulted from stripping, as compared with a State average of 23 percent. The county also had a small output of petroleum and natural gas. A total of 147,831 barrels of petroleum was recovered, virtually all by secondary methods, from the county's 44,722 acres of oil land. Many of the older natural-gas pools were nonproductive in 1952 and were used for summer storage of gas from other areas.

Allegheny County ranked third among Pennsylvania counties in production of cement in 1952. As native limestones are unsuitable for use in cement manufacture, most of the limestone is imported from other areas. In terms of value, cement was, next to fuels, the most important mineral product of the county. Major producers in 1952 were Pittsburgh Coke & Chemical Co., Green Bag Cement Division, Neville Island, and Universal Atlas Cement Co., Universal.

All the county's sand and gravel production in 1952 was washed material, obtained from river bottoms or old river terraces. Major producers were Dravo Corp. and Iron City Sand & Gravel Corp., both of Pittsburgh.

Most of the stone produced in the county was limestone crushed for use as road metal and railroad ballast and for agricultural purposes. Quarries in the county yielded substantial quantities of dimension sandstone used for masonry walls and flagging. In 1952 this material was produced by Elizabeth Stone Co., Elizabeth, and F. Matesia, Cuddy.

Allegheny County in 1952 was the largest source of miscellaneous clays and shale in Pennsylvania. Production was used in manufacturing building brick and tile. Major producers were Glassmere Brick & Tile Co., Glassmere; Milliken Brick Co., Inc., Wilkinsburg; Van Ormer Brick Co., Inc., Pitcairn; and McFetridge Bros. Brick Co., Creighton.

Perlite mined in the western United States was expanded at the Carnegie plant of Perlite Manufacturing Co. and at the Pittsburgh operation of Panacalite Perlite Co. Output was used as a lightweight aggregate.

ARMSTRONG

Mineral resources of Armstrong County consist of bituminous coal, natural gas, oil, stone, sand and gravel, and clay. In 1952 Armstrong County had a bituminous-coal production exceeding 3 million short tons. This coal was valued at $4.35 per ton and was produced predominantly from the Lower Kittanning and Upper and Lower Freeport beds, as the Pittsburgh seam is considered to be exhausted. Over 50 percent of the coal output during the year was strip-mined. Oil wells in the county yielded 15,752 barrels of crude oil in 1952.

All stone produced in the county was crushed or broken limestone and dolomite used for metallurgical fluxes and agricultural purposes and in the production of lime. Producers of lime included Craig Claypool, Walter Hershberger, and the C. D. McCanna lime plant, all of Kittanning. The major producer of limestone was the Michigan Limestone Division, United States Steel Co., East Brady and Worthington.

Armstrong County was the fourth largest producer of sand and gravel in Pennsylvania in 1952. All output was washed material from J. K. Davison & Bros., Pittsburgh, the county's sole producer.

The county ranked fifth among counties of the Commonwealth in output of fire clay in 1952. Leading producers included Graff-Kittanning Clay Products Co., Worthington; Continental Clay Products Co., and Kittanning Refractory Co., Inc., both in Kittanning; Kittanning Brick Co., Adrian; Freeport Brick Co., Freeport; Harbison Walker Refractories Co., Templeton; and Haws Refractories Co., Bridgeburg. The Graff-Kittanning Clay Products Co. also produced common clay, used in manufacturing brick, tile, and pottery.

BEAVER

Mines in Beaver County produced a limited number of mineral commodities in 1952. This lack of diversification was more than compensated for, however, by the county's prominent position in the clay and sand and gravel industries of Pennsylvania.

Beaver County ranked second in the output of fire clay in Pennsylvania in 1952. Major producers were McLain Fire Brick Co., Vanport; Negley Fire Clay Co., New Galilee; Malvern Fireproofing Corp., Darlington; Standard Clay Mfg. Co., New Brighton; and Eastvale Clay Products Co., Eastvale. A small tonnage of common clay was recovered from pits of W. H. Elverson Pottery Co., Inc., New Brighton.

The county ranked third among Commonwealth counties in output of sand and gravel in 1952. All production was washed material derived from the river bottoms, river terraces, and glacial deposits. Six producers operated during the year; the largest were the Dravo Corp., Shippingport Sand & Gravel Co., and Iron City Sand & Gravel Co. These 3 companies furnished 89 percent of the total county production of sand and gravel in 1952.

Mines in the county yielded a comparatively small tonnage of bituminous coal during the year. Inasmuch as most of the coal seams are less than 4 feet thick, 89 percent of the output was from strip pits. Oil wells in the county yielded 14,640 barrels of crude oil and a small quantity of natural gas during the year.

BEDFORD

The principal mineral commodity produced in Bedford County in 1952 was limestone used for flux, lime, and agricultural purposes. The major producer was New Enterprise Stone & Lime Co., New Enterprise. A considerable quantity of sandstone for refractory purposes was quarried by Leap Ganister Rock Co., Madley.

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Mines in the northeast section of the county, which includes the major producing region of the Broad Top field, yielded low-volatile bituminous coal valued at $5.99 per ton.

A small quantity of building sand was produced during the year by Feight Bros. Co., Everett.

BERKS

Cement, stone, clay, and sand and gravel were produced in Berks County in 1952. Cement continued to be the principal mineral product, although Berks ranked fifth among Pennsylvania cement-producing counties. Production was from the Allentown Portland Cement Co. plant at Evansville.

Stone production in 1952 consisted of crushed diabase and limestone. The latter was produced by Berks Products Corp., South Temple; E. J. Breneman, Inc., Pottstown; and Eastern Lime Corp., Kutztown. This limestone was used as a concrete aggregate and for agricultural purposes. Crushed diabase, produced mainly by J. T. Dyer Quarry Co., Monocacy, was sold for riprap, concrete aggregate, and railroad ballast.

Glen Gery Shale Brick Corp. produced miscellaneous clays for brick manufacture from its pits at Shoemakersville and Wyomissing.

Sand and gravel, produced by J. H. Gring, Sinking Spring, and the Schildt Bros., Temple, was sold for building and paving purposes.

The Bethlehem Steel Co. continued to develop its iron-ore deposit at Morgantown in 1952.

BLAIR

Quarries in Blair County in 1952 yielded limestone for concrete aggregate and agricultural purposes and sandstone for concrete, railroad ballast, and silica brick. The largest limestone producer was the New Enterprise Stone & Lime Co., Roaring Spring. Sandstone was quarried by General Refractories Co., Claysburg; J. L. Hartman Co., Sproul; and Basalt Trap Rock Co., Woodbury Township.

Mines in the county produced a small tonnage of bituminous coal valued at $4.32 per ton. Nearly two-thirds of this material was recovered by strip mining.

Clay production in Blair County in 1952 was small but varied. Pits of United Clay Mines Corp. near Williamsburg yielded a small quantity of kaolin. Woodbury Clay Co., Houston Township, and the Blair Clay Products Co., Altoona, mined fire clay; the latter company also had a small production of common clay.

Pits of Frankstown Sand Supply Co. and George H. Trude, both at Hollidaysburg, yielded a small tonnage of building sand.

BRADFORD

Nine men were employed in mining bituminous coal in Bradford County in 1952; production totaled 9,739 short tons. Sand and gravel for building and paving purposes were produced by Karl D. Shiner, Towanda.

BUCKS

Bucks County ranked first among Pennsylvania counties in the production of sand and gravel in 1952, which amounted to approximately 34 percent of the State's total output. Most of this material was dug by floating dredges from the Delaware River flood plain between Morristown and Tullytown. Production was sold for building, paving, and molding purposes. Major producers in 1952 were Warner Co., Falls Township; Amico Sand & Gravel Co., Morrisville; A. L. Lewis, New Hope; and Durnan & Good Co., Upper Black Eddy.

Stone production included a small quantity of crushed diabase for concrete aggregate and railroad ballast; limestone for agricultural use and other purposes; and granite for monuments and architectural uses. Major producers of stone were the General Crushed Stone Co., East Rockhill Township; Rushland Quarry Co., Rushland; Edward Karpinski, Langhorne; and New Hope Crushed Stone & Lime Co., New Hope. In 1952 the Rock Hill quarry of the General Crushed Stone Co. was 1 of 10 plants in the United States to operate without a single lost-time injury.

The Quakertown Brick & Tile Co., Quakertown, produced a small quantity of clay for manufacturing bricks.

BUTLER

The major mineral commodity produced in Butler County in 1952 was bituminous coal. Approximately 7 beds were mined; 73 percent of the output was from strip pits. A total of 1,897,263 tons, having an average value of $4.02 per ton, was recovered during the year. Butler County oil wells yielded 216,871 barrels of crude petroleum and a small quantity of natural gas during the year. The county ranked fifth in the State in the production of oil; approximately 103,026 acres was considered as oil bearing.

On the basis of value, cement was second to fuels as the most important mineral product of the county in 1952; Penn-Dixie Cement Co., Winfield Township, was the sole producer. A substantial tonnage of limestone for flux, agricultural purposes, lime, and various miscellaneous uses was quarried during the year. The largest producers were Michigan Limestone Division of United States Steel Corp., Boyers; and Grove City Limestone Co., Osborne. The sole lime producer was Mercer Lime & Stone Co., Branchton.

Fire clay was produced by Pittsburgh & Erie Coal Co., Slippery Rock, and common clay by Houston-Starr Co., Mars.

The only sand and gravel producer in the county in 1952 was H. W. Cooper Co., Slippery Rock.

CAMBRIA

Bituminous coal was the major mineral commodity produced in Cambria County in 1952; the county ranked second in Pennsylvania in the production of this material. Most of the output was from the 2½- to 6-foot-thick Lower Kittanning or Miller bed. Production in 1952 had an average value at the mine of $6.09 per ton, the highest in the State.

This County was also one of the major producers of fire clay in the State. Operators reporting in 1952 were Hiram Swank's Sons, Inc., Patton Clay Mfg. Co., and Triangle Clay Products Co.

CAMERON

Bituminous coal and natural gas were the only mineral commodities produced in Cameron County in 1952. All the bituminous coal was strip mined; as a consequence the county's coal industry had the highest production per man-day in the State.

CARBON

The major mineral product of Carbon County is a high-rank anthracite containing 3 to 5 percent volatile matter. Production in 1952 was valued at $16,393,733. Approximately 50 percent of the output was steam sizes. The average sales realization for these sizes in the Lehigh region, of which Carbon County is part, was $5.63; the domestic sizes netted $13.23.

Carbon County was the second largest source of finished iron oxide pigments in the State in 1952. Products of Prince Mfg. Co., Bowmanstown, the sole producer, included mineral black, brown and red oxides, ocher, sienna, and umber.

A small tonnage of crushed stone was reported produced from the D. D. Derstine quarry.

CENTRE

Mineral products of Centre County in 1952, in order of decreasing value of output, included lime, bituminous coal, stone, and clay. Eighty-eight percent of the coal produced was strip mined; the majority was from the Lower Kittanning bed. The average value of 1 ton of coal at the mine was $3.95 in 1952.

Ninety-eight percent of the county stone output was crushed limestone, used for flux, metallurgical purposes, and lime. Centre County led the State in lime production, primarily as a result of the widespread occurrence of the Bellefonte ledge in the Pleasant Gap-Bellefonte area. This formation is 77 feet thick and averages 98 percent $CaCO_3$. The 1952 output, used for building, agricultural, and chemical purposes, was produced by National Gypsum Co., Benner Township; Warner Co., Bellefonte; and Standard Lime & Stone Co. Limestone for uses other than in limekilns was produced by the above and by Neidigh Bros. Limestone Co., Oak Hall; Valley View Lime Co., Bellefonte; and Whiterock Quarries Co., Pleasant Gap. Crushed sandstone for silica brick was produced during the year by McFeely Brick Co.

General Refractories Co., Orviston, and J. H. France Refractories Co., Snow Shoe, produced a substantial tonnage of fire clay.

CHESTER

Lime, stone, and clay were produced in Chester County in 1952. Stone production included limestone, granite, sandstone, and miscellaneous stone. The principal producers of limestone were Warner Co., Cedar Hollow, and W. Ellis Johnson, Paoli. Output in 1952 was

used for flux, road metal, and agricultural purposes, as an asphalt filler, and for the manufacture of lime. Lime from the kilns of Warner Co. was used for building, agricultural, and chemical purposes. This company started its No. 2 rotary kiln January 29, 1952.[7] This unit is 300 feet long and has an inside diameter of 9 feet. As a result of successful operation of this kiln, all remaining shaft kilns were closed down. The largest production of granite in the State in 1952 was reported by Keystone Trappe Rock Co., Glenmoore, and French Creek Granite Co., St. Peters. Most of the output from these two operations was sold for concrete aggregate, although there was a small production of dimension granite (actually diabase for construction and architectural uses. The county ranked fifth in the State in 1952 in production of dimension stone. This material was used for curbing, flagging, and irregular blocks for buildings and bridges. A small quantity of dolomite for use in the production of magnesia was quarried during the year. Crushed and broken miscellaneous stone for use as a concrete aggregate was produced by Bradford Hills Quarry, Inc., Downingtown.

The Cedar Hollow quarry of Warner Co. was 1 of 10 in the United States operating without a single lost-time injury in 1952.

Common clay was produced by the McAvoy Vitrified Brick Co., Phoenixville, and a small quantity of fire clay was recovered by Phillip D. Cope, Lincoln University.

CLARION

Mineral commodities produced in Clarion County in 1952 were bituminous coal, natural gas, oil, and clay. The county had an output exceeding 2 million tons of soft coal, with an average value at the mine of $3.66 per ton. As a result of the limited thickness of most of the coal beds, 84 percent of the coal produced was strip mined. Oil wells in the county reported a production of 63,601 barrels of crude oil in 1952.

Clay deposits are abundant in the county, but the high iron content of many makes them unsuitable for use. Major production was fire clay from the Lower Clarion formation and flint clay from the Mercer beds. Producers of these materials were McLain Fire Brick Co., St. Charles; Frank B. Pope Co., Mayport; Climax Fire Brick Co., Climax; New Bethlehem Tile Co., New Bethlehem; and J. F. Eiswerth Estates, Lucinda. The New Bethlehem Co. was the sole county producer of common clay.

CLEARFIELD

Clearfield County ranked first among Pennsylvania counties in the production of clays in 1952. Virtually all the output was fire clay, although a small tonnage of common clay was produced by Robinson Clay Products Co., Clearfield. This company, as well as North American Refractories, Grampian and Lutherburg; Harbison-Walker Refractories Co., Mineral Springs and Wallaceton; Williamsgrove Clay Products Co., Bigler; Herman Kephart, Osceola Mills; Clearfield Clay Products Co., Clearfield; and Laclede-Christy Co., Clearfield, mined high-grade flint clay for refractory use. A high-alumina clay

[7] Rock Products, vol. 56, January 1953, p. 150.

for special high-temperature brick and cement was produced from the Mercer horizon at Curwensville and Morgan Run. Bells Landing Sand & Gravel Co., Bells Landing, produced building sand and gravel.

Bituminous coal was mined from several beds, some of them less than 2 feet thick. The high quality of the coal and low cost of strip mining made possible economic recovery of coal from the thin beds. A small quantity of natural gas was produced in the northwestern part of the county.

CLINTON

Mineral products of Clinton County in 1952 included soft coal, natural gas, clay, and crushed stone. About 95 percent of the coal output came from the county's 9 strip pits. As a result of the high percentage of coal recovered by strip mining, the county ranked fifth in the State in tonnage per man-day.

Plastic and flint clays were mined by the General Refractories Co., Beech Creek; Harbison-Walker Refractories Co., Monument; North American Refractories Co., Lock Haven; and Kelsey Mining Co., Gallagher Township. In addition, the Mill Hall Clay Products Co., Mill Hall, produced a small quantity of common clay.

In the southern end of the county, Lycoming Silica Sand Co. quarried limestone which was crushed and broken for concrete aggregate and road metal.

The output of natural gas increased substantially in 1952 relative to 1951. Daily production from the Leidy field exceeded 31 million cubic feet. Exploratory activity resulted in the discovery of the Tamarack pool early in the year; 26 wells were drilled in this area, resulting in 16 gas wells and 10 dry holes. The average daily initial open flow was 8,600,000 cubic feet.

COLUMBIA

Common clay was produced by Alliance Clay Products Co. from its pit at Mifflinville. Bloomsburg Sand & Gravel Co. operated a pit in Scott Township and recovered sand and gravel for local use. Anthracite was produced from several mines in Conyngham Township.

CRAWFORD

Crawford County's major natural resource is oil and gas. It was in this county that the huge domestic petroleum industry originated. Oil floating on the water of Oil Creek and other streams was the source of Seneca oil, so called because of its use by the Seneca Indians living in the area. The world's first producing oil well, drilled for the express purpose of finding petroleum, was successfully completed near Titusville. Since August 28, 1859, when oil first flowed from this well, the county has been an important petroleum center. In 1952 crude oil and natural gas were produced almost entirely by repressurizing old oil-bearing sands. The Pennsylvania Topographic and Geologic Survey estimated that 8,360 acres at the eastern end of the county are underlain by oil-bearing sediments. Production in 1952 was 35,295 barrels.

Pits in the county yielded substantial tonnages of sand and gravel for building and paving purposes. Major producers were the Meadville Supply Co., Meadville, and Moyers Bros. Sand & Gravel Supply Co., Conneaut Lake.

CUMBERLAND

Clay and stone were the only mineral products of Cumberland County in 1952. This county was the major source of kaolin in Pennsylvania; output during the year was sold as a cement whitener by the sole producer, Philadelphia Clay Corp., Toland. A small quantity of common clay was recovered from pits of the Penn Products Corp., Boiling Springs.

Stone production was limited to crushed limestone used for road metal and construction purposes. Major producers were Hempt Bros., Eberlys Mill; Bonny Brook quarry, Carlisle; and Valley Quarries, Inc., Chambersburg.

DAUPHIN

The principal mineral product of Dauphin County in 1952 was crushed limestone sold for flux and other metallurgical uses, concrete aggregate, railroad ballast, clay filler, and stone sand. Major producers were Bethlehem Quarry Co., Steelton; Hoffman Bros. & Wilson, Inc., Swatara Township; and H. E. Millard Lime & Stone Co., Swatara Station. The latter company also produced lime, principally for agricultural use.

A substantial tonnage of sand and gravel for building and paving was recovered from pits in the Susquehanna River terrace by Highspire Sand & Gravel Co. Ltd., Highspire, and F. H. Downey, Inc., Harrisburg. Glen Gery Shale Brick Corp., Royalton, and Bethlehem Quarry Co., Steelton, reported production of common clay.

Mines near Lykens, Wiconisco, and Williamstown yielded a small tonnage of anthracite during the year.

DELAWARE

Delaware County ranked second in the Commonwealth in production of granite dimension stone in 1952. Output was sold as irregular blocks for facing buildings and bridges, as well as for rubble. A small tonnage of the granite was crushed for stone sand. Major producers were Carl Galantino, East Lansdowne; Lima Building Stone Quarry, Inc., Lima; and Luglios Quarries and John Randazzo, both at Media. By far the most important mineral commodity produced in point of value, however, was a crushed granite-gneiss for concrete aggregate. Sole producer in 1952 was the quarry and plant of General Crushed Stone Co., Glen Mills.

The Philadelphia Brick Co. produced clay from its open pit in Darby Township. Output of expanded perlite was reported by Perlite Products, Inc., Primos.

ELK

Bituminous coal, crude oil, natural gas, and clay were produced in Elk County in 1952.

The major soft-coal-producing bed in the county is the Lower Kittanning. It was mined in Benezette, Jay, and Fox Townships; over half of the 1952 coal output was from strip mines. Oil wells yielded 31,569 barrels of crude oil and some natural gas during the year. The Benezette gas pool was discovered during the last week of December 1952. Production was recovered from the Oriskany sandstone.

Fire clay was produced at the Meyer clay mine and open pit of St. Marys Sewer Pipe Co., both in St. Marys. This material is used for manufacture of fire brick and heavy clay products.

ERIE

Erie County is a comparatively unimportant producer of mineral commodities. In 1952 the Kelly Island Lime & Transport Co. and the Nickel Plate Sand & Gravel Co., Erie, were the major producers of sand and gravel. Output was predominantly from old lake terraces. There was also an output of natural gas from the Albion sand in the Corry field.

FAYETTE

Bituminous coal continued to be the major mineral commodity produced in Fayette County, and in 1952 it ranked fifth in the State in output of this material. A high percentage of the output each year is used in manufacturing the famous Connellsville coke. Coal mined in the county ranges from 60 percent fixed carbon in the western part of the area to 72 percent in the Ligonier Basin in the east. A comparatively small quantity of natural gas was recovered from wells in anticlines in the western section of the county and from the crest of Chestnut Hill. Crude-oil production totaled 788 barrels in 1952.

The mineral commodities ranking second in value in Fayette County were sand and gravel, obtained from river beds and terraces. Principal producers were Dunbar Corp., Dunbar, and McClain Sand Co., Inc., Point Marion. The sand was sold for glass, molding, blast, fire, and engine use. The gravel was employed for building and paving.

Sandstone was quarried at several localities during the year from the Homewood-Connoquenessing strata. When crushed and broken, this material was used for silica brick, concrete, and road metal. In dimension form it was used as irregular blocks for finishing buildings and bridges. The sole producer of dimension stone was Oral Houseman, Belle Vernon. The crushed and broken material was produced by Connellsville Blue Stone Co., Connellsville, and General Refractories Co., Childs.

Flint and plastic clays for refractory use were recovered from pits worked by Big Savage Refractory Corp., Eureka Fire Brick Works, Mount Braddock, and Layton Fire Clay Co., Layton. The latter also produced common clay.

FOREST

Forest County is in the center of the Commonwealth's oil and gas belt. Wells in the county in 1952 yielded 48,825 barrels of crude oil, mostly from the Venango, Warren, Bradford, and Elk sands. Virtually all output during the year was by secondary recovery.

FRANKLIN

The major mineral commodity produced in Franklin County in 1952 was crushed and broken limestone for concrete, road metal, and agricultural purposes. Producers active during the year included Fry Coal & Stone Co., Mercersburg; Valley Quarries, Inc., Chambersburg; Binkley Bros. Inc., Dry Run; and Stewart Gaston, Shippensburg. A small tonnage of agricultural lime was produced at the plant of Frank L. Heinbough, Mercersburg. Mount Cydonia Sand Co., Inc., recovered sand for building purposes from its open pit in Greene Township.

FULTON

A small tonnage of bituminous coal was produced from mines in the northwest corner of Fulton County, an extension of the Broad Top Field of Bedford County. Limestone for concrete and road metal was quarried by H. B. Mellott Estate, Inc., McConnellsburg, and Oscar Martz Co. produced agricultural lime at its plant in Knobsville.

GREENE

The principal mineral product of Greene County in 1952 was bituminous coal. Production exceeded 9½ million tons, virtually all recovered by underground mining. The average value at the mine was $5.69 per ton. Crude oil and natural gas were produced from the Upper Nineveh, Lower Nineveh, and Gordon Stray sands. The county yielded 65,626 barrels of petroleum in 1952.

C. Wilbur Acklin Co., Jefferson, quarried a small tonnage of sandstone for concrete aggregate; and Greene County Brick & Stone Co., Waynesburg, had a small production of clay.

HUNTINGDON

Huntingdon County ranked second among Pennsylvania counties in the production of sandstone and fourth in value of output of sand and gravel. Sandstone producers included General Refractories Co., Harbison-Walker Refractories Co., and North American Refractories Co., all at Mount Union; and Stowe-Fuller Refractories Co., Alexandria. Output was utilized in the production of silica brick. White clay for refractory cement and furnace linings was recovered from pits of Alexandria Fire Clay Co., Alexandria, and Harbison-Walker Refractories Co.

Sand produced by Alexandria Fire Clay Co. and Pennsylvania Glass Sand Corp. was sold for use as glass, molding, building, fire, and engine sand.

Crushed and broken limestone for concrete and railroad ballast was quarried at McConnellstown by New Enterprise Stone-Lime Co. and in Spruce Creek Township by Warner Co.

Mines in the extension of the Broad Top field in the southern part of the county yielded soft coal.

INDIANA

Coal, clay, and limestone were produced in Indiana County in 1952. The major mineral commodity was bituminous coal. Of the more than 6 million tons produced during the year, only 865,249 was strip mined. The average value of a ton of coal at the mine was $5.24 in 1952.

Harbison-Walker Refractories Co. and Hiram Swank's Sons, Inc., Clymer, produced fire clay for refractory use.

The Hillsdale agricultural lime plant of New Castle Lime & Stone Co. was destroyed by fire early in the year. The company announced plans to build a new plant near Lowelville.

JEFFERSON

Jefferson County ranked second in the State in the production of clays in 1952. Virtually all the output was fire clay produced by Hanley Co., Summerville; Henry O'Neill & Co. (flint clay), Brookville; and Brockway Clay Co., Brockway. The sole producer of common clays was Falls Creek Clay Products Co., Falls Creek.

Fuels produced in the county during the year included crude oil and natural gas from wells in the northwest part of the county and bituminous coal, most of which was strip mined. The coal produced had an average value at the mine of $4.20 per ton.

Iron oxide pigments were produced at the plant of Vitre Pigments, Inc.

JUNIATA

In terms of value, sandstone (quarried by National Refractories Co., Van Dyke, and used in silica brick) was the most important mineral product of Juniata County in 1952.

Crushed limestone for use as concrete aggregate was quarried by W. N. Quigley in Fermanagh Township.

Jay A. Fulkroad & Son, McAlisterville, was the sole producer of lime in the county. Output was for agricultural uses.

LACKAWANNA

Anthracite was the only mineral commodity produced in Lackawanna County in 1952. The county ranked fourth in the State in output of this material.

LANCASTER

Lancaster County was one of the largest sources of limestone in Pennsylvania in 1952. This stone was crushed and broken and sold for use in concrete and as road metal. A small quantity of dimension stone for irregular blocks was quarried by J. C. Showalter Co., Blue Ball, and D. M. Stoltzfus & Son, Inc., Talmage. The latter organiza-

tion, with Ivan M. Martin, Inc., Blue Ball, and A. G. Kurtz & Sons, Ephrata, were the major producers of limestone in 1952. Lancaster County was also one of the few areas in the State in which lime was produced from dead-burned dolomite. The sole producer was J. E. Baker Co., Billmeyer.

Sand for building, paving, and fire purposes was recovered from pits operated by A. T. Harris Sand Co., Salisbury Township; Hempt Bros., Elizabethtown; and Milton Gravel Sand, Inc., East Petersburg.

Clay for brick manufacture was produced in 1952 by Glen Gery Shale Brick Co., Ephrata, and Lancaster Brick Co., Manheim Township.

LAWRENCE

Lawrence County ranked first in limestone and total stone output in Pennsylvania in 1952. The limestone quarried in the county ranges from 81 to 97 percent pure calcium carbonate and is mined from large quarries, several of which have working faces nearly a mile long. Major producers were Michigan Limestone Division, United States Steel Corp., Hillsville, and Bessemer Limestone & Cement Co., Bessemer. Output during the year was sold for flux, miscellaneous metallurgical uses, concrete, road metal, and agricultural purposes.

The cement industry of the county is based upon the abundance of exceptionally pure limestone. Plants utilizing this rock for cement production in 1952 were Bessemer Limestone & Cement Co., Bessemer, and Medusa Portland Cement Co., Wampum.

The Mahoning Valley Sand Co., West Pittsburgh, and the Superior Sand-Supply Co., New Castle, produced a substantial tonnage of sand and gravel for building and paving use in 1952.

Fire clay was produced by the Metropolitan Brick Co., Inc., Bessemer, and common clays by the Fenati Brick Co., Inc., and the Keystone Sand & Gravel Co., both of New Castle.

The county also produced a small tonnage of soft coal, virtually all by strip mining.

LEBANON

Lebanon County was the only county in Pennsylvania in 1952 in which metallic ores were produced. All of this material was from the Bethlehem Steel Co. Cornwall mine, which operated continuously during the year except for a period during midsummer when work was halted as a result of the Nation-wide labor strike in the iron and steel industry. The magnetite iron ore of the Cornwall mine yielded iron, gold, silver, copper, and cobalt in 1952.

Quarries in the county yielded large quantities of stone, principally limestone, during the year. Most of the limestone comes from the 300- to 400-foot-thick high-grade material comprising the Annville bed. Output is used for flux, as a filler, for open-hearth, miscellaneous metallurgical uses, and for agricultural purposes, as well as a concrete aggregate. The largest producers are H. E. Millard Lime & Stone Co., Annville; Calcite Quarry Corp., Lebanon; and Pennsylvania Aggregates Co., Cornwall.

In addition a small quantity of building sand was produced by Reber Sand & Coal Co., Lebanon.

LEHIGH

Lehigh County ranked second to Northampton in cement production for 1952. Major producers were Coplay Cement Mfg. Co., Whitehall Township; Giant Portland Cement Co., Egypt; Lehigh Portland Cement Co., Fogelsville and Ormond; and Whitehall Cement Mfg. Co., Cementon.

The county continued to be one of the most productive slate areas in the United States. Slate quarried in 1952 was processed into a diversity of products, including roofing, flagging, and electrical slate; blackboards; bulletin boards; and structural and sanitary products. Principal producers during the year were Francis Schleicher & Son and Penn Big Bed Slate Co., Inc.

Other mineral products of Lehigh County in 1952 included limestone and expanded perlite. Crushed limestone for concrete aggregate and road metal was quarried by Lehigh Stone Co., Ormond, and C. H. Ziegenfuss Co., Inc., Allentown. Perlite from mines in western United States was expanded at the Allentown plant of Pennsylvania Perlite Corp. for use as a lightweight aggregate.

LUZERNE

Luzerne County continued in 1952 to be the principal source of anthracite in the United States, although production followed the industry trend and decreased as compared with 1951. Shipments of steam sizes in the Wyoming region, of which Luzerne County is a part, increased from 30 percent of the total in the previous year to 32 percent in 1952. These sizes had an average value of $6.54; domestic sizes averaged $13.13 per ton.

Other mineral products produced during the year included stone, sand and gravel, and clay. Sandstone from the quarries of Coon Certified Concrete Co., Luzerne, and General Crushed Stone Co., White Haven, was used for flagging, and was crushed for railroad ballast, concrete, and road metal. The General Crushed Stone Co. White Haven quarry was awarded a safety plaque for operating without a single lost-time injury in 1952. Airport Sand & Gravel Co., Wyoming; Glendale Sand & Stone Co., Avoca; Banks Stone & Sand Co., Kingston; and Honey Hole Sand & Stone Co., Hazleton, were major producers of sand and gravel for use in building and paving, and as railroad ballast. Miscellaneous clays were mined by Hazleton Brick Co. from its open pit in Hazel Township.

LYCOMING

Lycoming County was one of the major sources of iron oxide pigments in Pennsylvania in 1952. Keystone Filler & Mfg. Co. and Pennsylvania Paint & Filler Co. produced mineral blacks and natural red oxides. These companies also mined colored shale and tripoli (rottenstone) for use as paint and phonograph-record filler, respectively.

Sand and gravel, mostly dredged from the Susquehanna River, were sold for molding, building, paving, and engine uses, as well as for railroad ballast. J. A. Eck & Sons, Inc., and the Lycoming Silica Sand Co., Fairfield Township, were principal producers of these mineral products.

Stone production in 1952 was limited to crushed limestone for road metal, agricultural, and concrete uses. Major producers were Lycoming Silica Sand Co., Muncy Township; Pine Creek Lime & Stone Co., Porter Township; and T. A. Muncy Lime Products, Muncy Township.

McKEAN

McKean County continued in 1952 to rank first among Pennsylvania counties in production of crude oil and natural gas. During the year 36,031 wells yielded 9,057,674 barrels of crude petroleum from 101,775 acres of land considered to be oil bearing. County production was 80 percent of the total of State output in 1952. Hanley Co., Lewis Run, produced common clay. Mount Jewett Fire Clay Co., Mount Jewett, produced fire clay, and Kaul Clay Products Co., Clermont, reported an output of both types. Molding sand was recovered by C. L. McGavern, Jr.

MERCER

Sand and gravel for molding, building, fire and engine purposes were produced by the Liberty Stone Products Co., West Middlesex, and the White Rock Silica Sand Co., Greenville.

Mines and wells in the county also produced small quantities of bituminous coal, oil, and natural gas in 1952.

MIFFLIN

Mineral commodities produced in Mifflin County in 1952 included stone, lime, and sand. Virtually all the stone output was limestone from quarries of Bellefonte Stone Products Corp. and Bethlehem Quarry Co., both at Naginey. Production was used for flux, concrete, railroad ballast, stone sand, and agricultural purposes. The Haws Refractories Co., Hawstone, quarried sandstone for use in silica-brick manufacture.

Sole producer of agricultural and chemical lime in 1952 was Lewistown Lime Co., Shrader.

Pits of Pennsylvania Glass Sand Corp., Wayne Township, and Miller Silica Sand Co., Burnham, yielded glass, molding, building, grinding, fire, and engine sand.

MONROE

The only mineral production reported from Monroe County in 1952 was limestone from the Thomas P. Rogers Co. quarry near Stroudsburg and building sand and gravel from the Steward & Clyde White pit close to the same town. The limestone output was crushed and sold for use in concrete and as road metal.

MONTGOMERY

In 1952 Montgomery County ranked second among Pennsylvania counties in production of dimension stone and third in the output of all types of stone. In addition, it was the only Pennsylvania county in which dimension basalt was produced in 1952.

Most of the stone output was limestone and dolomite used for flux, concrete, refractories, agriculture, magnesia production, and a filler in asphalt. Major producers were Bethlehem Quarry Co., Bridgeport; G. & W. H. Corson, Inc., Plymouth Meeting; and Stowe Trap Rock Co., Oreland. Dimension stone quarried during the year and sold as irregular blocks consisted of sandstone, granite, and basalt. Sandstone was produced by William Bambi & Sons Co., Norristown, and M. & M. Stone Co., Harleysville; granite by Marcolina Bros., Inc., Chestnut Hill; and basalt by R. K. Kibblehouse, Perkiomenville, and Montgomery Stone Co., Montgomeryville. Firestone Products Co., Inc., Edge Hill, and Irvin B. Gill Co., Collegeville, produced crushed and broken sandstone for silica brick, concrete, and road metal. Firestone Products Co., Inc., and Anthony Manero & Sons Co., Edge Hill, produced miscellaneous types of rock, which were sold for rough and dressed building stone and for refractory purposes.

Montgomery was the only county in Pennsylvania in which magnesium compounds were produced. Keasby & Mattison Co., Ambler, and Phillip Carey Mfg. Co., Plymouth Meeting, used the Pattinson process to recover precipitated magnesium carbonate, and extra light-light magnesias.

In 1952 Valley Forge Cement Co., West Conshohocken, and Wm. Bambi & Sons, Inc., were the sole producers of cement and sand and gravel, respectively.

The Norristown Brick Co., Norristown; Keller-Whilldin Pottery Co., North Wales; Robinson Clay Products Co., Pottstown; and Lansdale Brick Products Co., Lansdale, produced fire clay and common clay.

Montgomery County ranked fifth among Pennsylvania counties in output of lime in 1952. Lime suitable for use as building, agricultural, and chemical lime and dead-burned dolomite were produced by G. & W. H. Corson, Inc., and Cardol Corp., both of Plymouth Meeting.

MONTOUR

The major mineral commodity produced in Montour County in 1952 was limestone from Mausdale Quarry Co., Grovania, and Narehood Bros., Milton. Output was used as concrete aggregate and for road metal. A small quantity of agricultural lime was produced at the plant of Harry Tittle Co.

NORTHAMPTON

Northampton County ranked first in the output of cement, slate (value), and iron oxide pigments in Pennsylvania in 1952. Major producers of the latter were Reichard-Coulston Co. and C. K. William & Co. The State cement industry is concentrated to a large extent in this county. Of the 24 plants operating in Pennsylvania in 1952, 11 were in Northampton County. In addition, more than half the value of the State production came from this area. Major producers were Universal Atlas Cement Co., Northampton; Keystone Portland Cement Co., Bath; Alpha Portland Cement Co., Martins Creek; and the Lone Star Cement Corp., Nazareth.

A substantial portion of the Nation's slate production is quarried in Northampton County. Output in 1952 was sold for roofing, structural, and sanitary uses, as well as for blackboards and flagging. Of the 15 plants reporting production in 1952, the largest were North Bangor Slate Co., Bangor; Capitol Slate Co., Inc., East Bangor; Albion Vein Slate Co., Plainfield Township; Parsons Bros. Slate Co., Plainfield Township; and Stephens-Jackson Co., Pen Argyl.

Mines, pits, and quarries in the county also yielded limestone for concrete, railroad ballast, and stone sand, as well as building and paving sand and gravel. Limestone was quarried by Bethlehem Quarry Co., Bethlehem; Narehood Bros., Milton; and Trumbower Co., Inc., Nazareth. W. J. Lowe & Sons Co., Easton, and Portland Sand & Gravel Co., Portland, produced sand and gravel.

NORTHUMBERLAND

The major mineral commodity produced in Northumberland County in 1952 was anthracite, the value of which exceeded 44 million dollars. Stone production included crushed sandstone and limestone quarried by L. E. Kocher Co., and Eugene Meckley Co., Herndon, respectively. The crushed material was used as concrete aggregate, for road metal and railroad ballast.

Common clay was produced by Watsontown Brick Co., Watsontown Mineral Products Co., and Glen Gery Shale Brick Corp., all in Watsontown. W. W. Gulick Sand Co. and M. E. Wallace Co. produced molding sand from pits near Danville.

A small quantity of agricultural lime was produced by Clyde Starook at his plant in Point Township.

PERRY

Crushed and broken limestone, quarried by Binkley Bros., Inc., Newport, and used in concrete and as road metal, was the sole mineral product of Perry County in 1952.

PHILADELPHIA

United States Gypsum Co. continued to operate its gypsum products plant in Philadelphia County in 1952. Crude gypsum for processing was imported from Nova Scotia. Building sand and gravel was produced by Liberty Corp.

POTTER

Crude oil and natural gas were the only mineral products recovered in Potter County in 1952. Output was from the Oriskany and Bradford sands. The county ranked fourth among Pennsylvania oil-producing counties. Wells, principally in the northwestern part of the county, yielded 223,335 barrels of crude oil during the year.

The Tennessee Gas Transmission Co., in a joint venture with United Natural Gas Co., began developing in 1952 an underground storage reservoir in the Hebron gas field in the northwestern part of the county. After rehabilitation of old wells in the field, completion of new wells for increased injection and production capacities, and in-

stallation of other field equipment, it is planned to inject a base storage into the reservoir of approximately 23.8 billion cubic feet of natural gas and a top storage of 22.5 billion cubic feet. Maximum storage will be 46.3 billion cubic feet at approximately 2,000 p. s. i. wellhead pressure.

SCHUYLKILL

The most important mineral commodity produced in Schuylkill County in 1952 was anthracite. The county was the second largest producing area in the United States. The Schuylkill region, of which the county is part, produced the highest percentage of steam sizes in the country (54 percent). The average sales realization for this area in 1952 for domestic sizes was $12.66 per ton and for steam sizes $5.45.

A small tonnage of common clay and crushed limestone was produced by Auburn Brick Co., Auburn, and the Andreas Quarry Co., Andreas, respectively.

SNYDER

Mineral products of Snyder County in 1952 included crushed limestone for concrete and agricultural purposes, clay for brick, and lime. Lime was produced by Carton Confort Co., Mount Pleasant Mills; pits of Glen Gery Shale Brick Corp., Beavertown, and Paxton Brick Co., Paxtonville, yielded clay; and crushed limestone was quarried by National Limestone Quarry, Franklin Township.

SOMERSET

Somerset County was an important source of soft coal in Pennsylvania in 1952. Strip mines yielded 26 percent of the output during the year. The Upper Kittanning was the major bed worked.

The county ranked fourth among Pennsylvania counties in clay production. The entire output consisted of fire clay produced by Otto Brick & Tile Works, Salisbury; General Refractories Co., Fort Hill; and Hiram Swank's Sons, Inc., Conemaugh Township. There was also a minor production of agricultural lime, building sand and gravel, crushed limestone and sandstone, and natural gas. Lime was produced by Addison C. Lottig, Larimer Township, and sand and gravel by Boswell Sand Co. and E. H. Shanlis, both of Boswell. Crushed stone was recovered from quarries of Keystone Lime Co., Elk Lick Township; Somerset Limestone Co., Inc., Jefferson Township; and the Friedens Block Co., Somerset.

SULLIVAN

The only mineral commodity produced in 1952 in Sullivan County was semianthracite mined from properties at Bernice and Lopez in the northeastern part of the county.

SUSQUEHANNA

Mineral products of Susquehanna County in 1952 were limited to dimension sandstone and a small quantity of miscellaneous dimension stone. Dimension sandstone for building construction was quarried by W. H. Swingle, Jr., Harford, and Tomkins Bros. Clarence S. Chamberlain, Susquehanna, and George Wilbur Co., Hallstead, produced miscellaneous dimension stone.

TIOGA

Wells and mines in Tioga County yielded oil, natural gas, soft coal, and sand in 1952. Of the coal production 16 percent was strip mined. Continental Cement Products Co., Inc., produced paving sand. Crude-oil production during the year totaled 3,296 barrels.

UNION

The Faylor Lime & Stone Co., Winfield, was the sole mineral producer in Union County in 1952. Crushed and broken limestone produced by this company was sold for concrete aggregate and agricultural stone.

VENANGO

Venango County ranked second as a producer of oil in Pennsylvania in 1952. Wells in the county produced 607,268 barrels of crude oil, virtually all through secondary recovery. It is estimated that 155,819 acres of the county is underlain by oil-producing rocks.

Venango County also had a small output of soft coal, almost all of which was produced by strip mining. As a result, the county ranked second in ton-per-man-day production

The Industrial Silica Corp., Utica, and Oil City Sand & Gravel Co., Oil City, reported a small production of molding, building, and paving sand and gravel.

WARREN

The major mineral commodity produced in Warren County in 1952 was oil from the Warren, Glade, and Clarendon sands, which are included in the 63,777 acres of oil-producing sands estimated to underlie the county. The 476,021 barrels of crude oil recovered in 1952 placed the county in third position among oil-producing counties in the State.

Building sand and gravel were produced by General Concrete Products Corp., Starbrick, and the Anderson Brick & Supply Co., Brokenstraw Township, had a small output of clay.

WASHINGTON

Washington County ranked first in production of bituminous coal and sixth in output of oil in Pennsylvania in 1952. Virtually all bituminous coal produced was recovered by underground mining. The average value of the coal at the mine was $5.76 per short ton.

The 45,013 oil-productive acres in the county yielded 212,774 barrels of crude oil.

Other mineral commodities produced in the county in 1952 included natural gas, clay, and stone. Clay were produced by Monongahela Clay Products Co., Scott's Hollow; Donley Brick Co., Washington; and Westmoreland Clay Products Co., Vance Station. Dimension sandstone, for irregular blocks and flagging, was quarried by the Malli Mines Co.

WAYNE

In 1952 General Stone Co. quarried limestone for concrete and agricultural purposes. Chas. Caputo, Honesdale, and Wayne Con-

crete & Sand Works, Lake Ariel, produced building and paving sand and gravel. A small quantity of anthracite was also mined during the year.

WESTMORELAND

Westmoreland County is one of the larger sources of soft coal in the State. Production in 1952 had an average value at the mine of $5.33 per ton.

Quarries in the county yielded a substantial tonnage of sandstone for irregular blocks and for concrete aggregate. Producers of dimension stone were J. C. Beumont Co., Brant Hoover Co., Andrew White Co., and J. S. Robinson Co., Inc. Crushed material was produced by Adam Eidemiller, Greensburg, and Latrobe Construction Co., Ligonier Township.

Fire clay was recovered by Garfield Refractory Co. from its pit at Bolivar and from the pit of Kingston Brick Co., Latrobe. Westmoreland Clay Products Co., Greensburg, produced miscellaneous clays.

WYOMING

The Falls Sand & Gravel Co., Inc., and the Wyoming Sand & Stone Co., both in Falls Township, produced building and paving sand and gravel in 1952.

YORK

The mineral economy of York County was extensive and diversified in 1952. Mineral operations yielded large quantities of lime, cement, stone, and slate, as well as substantial tonnages of clay, sand, and gravel. The county ranked second among Pennsylvania Counties in production of lime, first in the output of slate, and seventh in the production of crushed and broken limestone.

Manufacture of lime was the principal mineral industry in the county in 1952. Three plants were operating during the year; and one, J. E. Baker Co., York, produced dead-burned dolomite. Lime for building, agriculture, and chemical purposes was produced by Amos K. Stoltzfus and H. E. Millard Lime & Stone Co.

Crushed and broken limestone was the only stone produced in the county in 1952. Output was sold for concrete aggregate, railroad ballast, agricultural purposes, filler, flux, and whiting. Major producers during the year were Thomasville Stone & Lime Co., Thomasville; York Stone & Supply Co., York; Eli Z. Zinn, Inc., York; Standard Concrete Products Co., Inc., York; and National Gypsum Co., York.

York County was also a large source of cement in 1952. This material came from the Medusa Portland Cement Co. plant in York.

The Funkhouser Co., Delta, was the sole producer of slate in the county in 1952. In terms of tonnage, the county ranked first in the State in quantity of slate produced, but the value of the product was low, since it was ground and sold as flour or granules.

Sand and gravel were produced by the Neuman Sand-Supply Co., York, for building and paving purposes. Common clay, mainly for brick use, was mined by the Spring Garden Brick & Clay Products Co., York; York Colonial Brick Co., York; and the Glen Gery Shale Brick Corp.

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